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DOMINION OF CANADA.

Smallpox in the Province of Quebec.

MONTREAL, March 16, 1900.

SIR: The present status of the smallpox outbreak in this province is as follows:

Municipality.	County.	Population.	Date of outbreak.	New cases since last report. (a)	Total cases since outbreak.	Died.	Recovered.	Still sick.	Houses infected since outbreak.	Houses still infected.
St. Philippe de Néri.....	Kamouraska.....	1,049	Aug. 18	0	9	.....	9	0	5	0
Mont-Carmel.....	do.....	1,075	Sept. 5	0	196	.....	196	0	49	0
St. Paschal.....	do.....	3,109	Oct. 15	0	24	.....	24	0	4	0
Woodbridge (St. Bruno).....	do.....	3,109	Jan. 26	0	12	.....	12	0	1	0
Ste. Hélène.....	do.....	1,518	Nov. 15	0	3	.....	3	0	1	0
St. Germain.....	do.....	1,600	do.....	0	31	.....	31	0	7	0
St. André.....	do.....	1,389	Jan. 20	13	13	1	5	7	4	4
Amqui.....	Matane.....	2,500	Dec. 16	0	2	.....	2	0	1	0
Métis.....	do.....	2,523	Jan. 20	0	1	.....	1	0	1	0
Ste. Angèle.....	do.....	1,231	Mar. 11	1	1	.....	1	1	1	1
Mann.....	Bonaventure.....	1,808	Jan. 13	0	2	.....	.....	62	2	60
Shoolbred and Nouvelle.....	do.....	2,150	Jan. 16	0	1	.....	1	0	1	0
Carleton.....	do.....	1,078	do.....	0	7	.....	6	1	1	1
Matapédia.....	do.....	1,273	October.	0	121	.....	119	2	88	2
Restigouche.....	do.....	1,579	Dec'ber.	0	65	.....	65	0	11	0
Rimouski.....	Rimouski.....	2,649	(?)	5	5	.....	.....	5	3	3
Montreal City.....	.....	275,000	Jan. 16	0	1	.....	1	0	1	0

a Date of last report, February 20. b Patients removed to civic hospital, in Campbellton, New Brunswick.

The only case of death we had up to date had been attended by a quack.

Respectfully,

ELZÉAR PELLETIER,

Secretary Board of Health of the Province of Quebec.

The SURGEON-GENERAL,

U. S. Marine-Hospital Service.

ENGLAND.

Malaria—A book by the Liverpool School of Tropical Medicine.

WASHINGTON, D. C., March 10, 1900.

SIR: I have the honor, by direction of the Secretary of State, to inclose herewith for your information a copy of a dispatch from the consul of the United States at Birmingham, England, in regard to malaria as seen from the standpoint of the Liverpool School of Tropical Medicine.

Respectfully,

THOS W. CRIDLER,

Third Assistant Secretary.

Hon. SECRETARY OF THE TREASURY.

[Inclosure—Advance copy of a dispatch for the use of the United States Marine-Hospital Bureau.]

Malaria as seen from the standpoint of the Liverpool School of Tropical Medicine.

BIRMINGHAM, February 9, 1900.

SIR: The Liverpool School of Tropical Medicine has issued a book containing "Instructions for the prevention of malarial fever for the use of residents in malarious places." The Times finds these instructions "of so simple and efficient a character and so well calculated to effect the purpose for which they are designed," that it

repeats the leading facts, and does this in so popular and attractive a way that I forward a copy of the article. It reads as follows:

"The fevers collectively termed malarial, which range from what was not uncommon in certain parts of England fifty years ago, under the name of 'ague,' to the malignant and rapidly fatal forms met with in the tropics, have constituted, perhaps, the chief impediment to the colonization by Europeans of many countries which in other respects appeared to be admirably adapted to undergo development under the influence of civilized immigrants. In some of these countries the native races are at least partially free from liability to the disease; but even when this is the case, and it is by no means universal, they are generally of a low type and of depressed vitality. Vast regions of Africa have long been regarded as almost necessarily fatal to white races; millions of acres in India are left without cultivation, and even Europe itself has been desolated over considerable portions of its service.

"The Italian Campagna, so fertile and populous under the dominion of the Romans, has in modern times been reduced by malaria to an arid waste almost destitute of human inhabitants; and Wellington's army, when in Estremadura, was assailed with such severity as to threaten its very existence. In England, during many periods of our history, malaria has prevailed over wide districts, and even within living memory was not uncommon in the 'fen country;' but not the least of the difficulties which it presented to inquirers was due to its constant tendency to disappear before drainage and cultivation. Chiefly from this cause it has been to so large an extent banished from our shores that English physicians have had but restricted opportunities of studying its phenomena, while the observers who have traced its course in foreign countries have worked out innumerable details with regard to its behavior, the varied climatic conditions under which it exists, its relation to soil, to altitude, and to vegetation, which were practically quite valueless until, within the last few years, the key was obtained to their interpretation. This key has been afforded, at last, quite as much by improvement in instruments and methods of research as by increased diligence on the part of those by whom they were employed.

"It has long been known that any continued prevalence of malarial fever was attended by the occurrence of extensive changes, apparently of a degenerative character, in the physical condition of the blood; and these changes, when they were made the subject of investigation by the aid of modern microscopes, were traced to the presence of parasites as invariable concomitants of the disease. Blood owes its color to the presence of innumerable minute bodies called its red corpuscles; bodies so minute and so numerous that a single cubic millimeter of blood contains an average of about 5,000,000 of them; and it is within these corpuscles that the parasites were discovered. Malarial fevers are characterized by definite exacerbations and intermissions; and it soon became apparent that these were severally coincident, in point of time, with successive stages of the life history of the parasite, each attack of fever denoting the hatching of a new brood, and presenting the successive stages of shivering, of heat, and of sweating, coincidently with their growth and development, at the conclusion of which each corpuscle which had been invaded by them, perished, and its function as a carrier of oxygen to the tissues was abolished. Unlike the now familiar vegetable parasites collectively called microbes, by which so many other diseases are occasioned, the parasite of malaria belongs to the animal kingdom; but, like the microbes, its numbers increase with amazing rapidity.

"Until they reach a considerable amount the parasite would not be productive of serious symptoms; but by the time an attack of fever is fairly established, these numbers often amount to something like 250,000,000, and thence would range upward to 1,000,000,000. It has long been known that quinine was the most potent of all remedies for ague, and its administration at all sorts of times and in all sorts of doses had gradually led to the experimental determination of the conditions of its greatest efficacy; but prior to the discovery of the parasite, it was regarded as being essentially 'antiperiodic' in its effects, that is to say, as exerting some mysterious influence in preventing the rhythmical recurrence of morbid phenomena.

"The discovery of the parasite led to the further discovery that quinine cured ague simply by poisoning the parasite, and that it was most effective for this purpose when given in such doses and in such a way as to be present in the blood in sufficient quantities during a certain period of their growth. But it seldom killed them all, and more usually left a few individuals, perhaps more or less languishing, but still living and reproducing their kind, and capable of giving rise to a fresh attack of fever, even after the lapse of many months.

"The next stage in the investigation was to ascertain through what channel the malaria parasite became introduced into the human body; and Dr. Patrick Manson, who had previously traced another form of infection to the mosquito, was, we believe, the first to suggest that this insect was the most probable delinquent. The investigations of

Major Ross, to whose letter claiming priority we were glad to give insertion on Wednesday, finally established the correctness of the hypothesis. The particular mosquito concerned is of the species known to naturalists as *Anopheles*, and the evidence of the crime is complete. He, or rather she, for the ladies of the family are the sole offenders, is furnished with salivary glands which secrete the poison which she injects into her bites. A female may be hatched from a captured larva, and fed for the first time by being permitted to bite a man suffering from fever. She will swallow one or more of the parasites or their spores as part of her meal, and, if kept in confinement, their life within her body may be observed. They ultimately find their way from her stomach to her salivary glands, and from these are injected with the poison into the blood of the next victim whom she may select or may be furnished with. The process can be watched from beginning to end, and it constitutes a chain of morbid action of the most interesting and curious character, which, at the same time, completely clears up the whole question of the nature and causation of the fever.

"All speculations about air, about soil, about 'malaria belts,' and the like have been rendered obsolete. There is no reason to believe that the parasite finds access to the human body through any other channel, or that the 'gnats' or 'mosquitoes,' which infest regions free from malaria, are examples of *Anopheles*. If this particular insect could be extirpated there is every justification for the hope that malarious fevers would disappear from the earth; and, fortunately, the extirpation does not seem likely to present any insurmountable difficulty. The eggs are laid in water, and the larvæ, when hatched, live in water for about a week before they assume the mosquito form. As larvæ, like those of the common gnat, they rise to the surface of the water to breathe; and a film of oil on this surface is speedily fatal to them by blocking up their air spiracles. The fully formed mosquito lives for many weeks, but is not presumed to travel far, and probably always obtains its food within easy reach of its native pool of water, to which it periodically returns for the purpose of depositing its eggs.

"Much may be done, therefore, by drying up the pools in the vicinity of houses, or by treating them once a week with a film of kerosene oil. Much may be done also by killing the mature insect when resting upon a wall after its meal; and it is to be noted that the true *Anopheles* rests with its body almost at right angles to the surface of the wall, while the absolutely or comparatively harmless gnat rests with its body parallel to the wall, or even somewhat inclining toward it. The little book or pamphlet to which we refer contains instructions for identifying and destroying the *Anopheles*, both in its adult and in its larval forms, also for rendering habitation in the tropics as safe as may be possible against its incursions. The whole of the few pages are written with admirable brevity and clearness, and should enable Englishmen, armed in complete panoply of knowledge, to preserve their health in regions which have proved only too fatal to many generations or their predecessors.

Respectfully,

MARSHAL HALSTEAD,
United States Consul.

HON. ASSISTANT SECRETARY OF STATE.

Report from Liverpool—School of tropical diseases.

LIVERPOOL, ENGLAND, March 12, 1900.

SIR: I have the honor to make the following report concerning the transactions of the Service at the port of Liverpool for the week ended March 10, 1900:

One case of smallpox is reported, otherwise the health of the port remains good. It occurred in the person of a sailor arriving at Liverpool on the steamship *Nubian* from Bombay via Marseilles. The history of the case shows that the exposure to the infection took place at Marseilles.

Eighteen vessels cleared during the week for ports in the United States; of these 1 was not inspected and partial inspections were made in the case of 3 others. One thousand four hundred and forty immigrants were inspected and passed; 26 packages, the effects of 24 Russians, were disinfected and labeled.

The situation in regard to freight from suspected localities remains unchanged. I transmit herewith under a separate cover the first annual report (for the year 1899) of the Liverpool School of Tropical Diseases.

The course of instruction covers a period of two months and com-